

September 27, 1996

OFFICE OF THE HEARING EXAMINER
KING COUNTY, WASHINGTON

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REPORT AND DECISION ON APPEAL FROM
DECISION OF PLUMBING BOARD OF APPEALS.

SUBJECT: Seattle-King County Department of Public Health File No. HD950001

STUDOR, INC.
Appeal from Decision of Plumbing Board of Appeals

Applicant: Studor, Inc.
Attn: Jack Beuschel
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Appellant: Studor, Inc.
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Represented by
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PRELIMINARY MATTERS:

Application or petition submitted:	August 25, 1995
Plumbing Board of Appeals decision issued:	May 10, 1996
Notice of appeal received by Examiner:	May 24, 1996
Statement of appeal received by Examiner:	May 24, 1996

EXAMINER PROCEEDINGS:

Pre-hearing Conference:	August 12, 1996
Hearing Opened:	September 18, 1996
Hearing Closed:	September 18, 1996

Participants at the proceedings and the exhibits offered and entered are listed in the attached minutes. A verbatim recording of the hearing is available in the Office of the King County Hearing Examiner. Review deadlines were waived by stipulation of the parties.

ISSUES ADDRESSED:

Plumbing Board of Appeals

- Alternate materials and methods under UPC Section 201
- Review standards for appeals of Plumbing Board decisions

FINDINGS, CONCLUSIONS & DECISION: Having reviewed the record in this matter, the Examiner

now makes and enters the following:

FINDINGS:

1. On August 23, 1995, Studor, Inc. filed an application with the Seattle-King County Department of Public Health for approval of its air admittance valves as an alternate material or method under Section 201 of the Uniform Plumbing Code. The Studor application was accompanied by 19 written exhibits, including technical specifications for the Studor devices, test reports, and listing certifications from various national and international associations.
2. This application was Studor's second attempt to obtain Health Department approval for use in King County of its air admittance valves. A prior application had been denied in 1994, and no timely appeal from that decision had been taken. As a consequence, Mr. Dick Andersen, the Chief Plumbing Inspector, acting on behalf of the King County Plumbing Board of Appeals, on August 28, 1995, rejected the second Studor application as being unsupported by new evidence sufficient to warrant reconsideration of the Board's previous denial.
3. On September 5, 1995, Studor, Inc. appealed to the Hearing Examiner the Board's decision rejecting its second application. Based on written motions and argument, the Examiner on December 11, 1995 ruled that the second Studor application was not barred by the Plumbing Board's prior denial of the 1994 application because a substantial change in the circumstances and conditions relevant to review of the second application had occurred. The Examiner remanded the second Studor application back to the Plumbing Board of Appeals with instructions to provide a hearing on its merits consistent with the provisions of KCC 16.32.170 and pursuant to the standards stated at Section 201 of the Uniform Plumbing Code (UPC).
4. The Plumbing Board of Appeals held a hearing on Studor's second application for approval of its air admittance valves under authority of Section 201(e) of the Uniform Plumbing Code on February 14, 1996. On May 10, 1996, the Board issued its written decision. In this decision the Board declined to approve use of the Studor four-inch Maxi-Vent air admittance valve but approved use of the two-inch Mini-Vent valve subject to a set of nine conditions. On May 24, 1996, Studor filed a timely appeal of the Plumbing Board's decision, seeking to overturn the Board's denial of the four-inch valve and to delete the conditions placed on use of the two-inch valve.

The Hearing Examiner's Office held a pre-hearing conference on the above-referenced appeal on August 12, 1996, and issued a pre-hearing order on August 15, 1996, mandating that the appeal should be heard de novo in accordance with the general appeal provisions contained at KCC Chapter 20.24. The need for an appeal de novo was further supported by the fact that an attempted tape recording of the Plumbing Board's February 14, 1996 hearing proved to be defective, thus depriving the record of a transcript of that proceeding. The parties stipulated to a September 18, 1996 hearing date and waived applicable time limits requiring an earlier completion of the appeal process.

5. KCC Chapter 16.32 comprises the King County Plumbing Code, and pursuant to KCC 16.32.030 the 1991 edition of the Uniform Plumbing Code has been adopted by the County as an official regulation. The duty to act as Administrative Authority to administer and enforce the provisions of the UPC has been delegated by the Director of Public Health to the Chief Plumbing Inspector, Dick Andersen. KCC 16.32.170 establishes a Plumbing Board of Appeals comprised of six voting members, with the Chief Plumbing Inspector as Administrative Authority serving as a non-voting member.
6. The jurisdictional authority of the Plumbing Board of Appeals is loosely defined. KCC 16.32.170.B provides that "The board of appeals shall determine whether a correct interpretation of the code has been made by the administrative authority in any case which results in an appeal". The section also provides for an appeal "by any party aggrieved by the action of the administrative authority". When an appeal is filed, the Board shall hear it within 30 days, with the appellant being entitled to "appear in person before the board, to be represented by an attorney, and to introduce evidence in support" of the appeal petition. KCC 16.32.170.C provides that decisions of the Plumbing Board shall be in writing and may be further appealed to the King County Hearing Examiner either by the applicant or by the administrative authority.
7. Subject to local modifications adopted by ordinance, the substantive regulation enforced by the Chief Plumbing Inspector and his employees is the 1991 edition of the Uniform Plumbing Code.

UPC Section 201 sets the minimum standards for materials, fixtures or devices used in plumbing installations within King County. UPC Section 201(a) provides as a general rule that all such items "shall conform to approved applicable standards, or to other equivalent standards acceptable to the Administrative Authority, and shall be free from defects". Under the UPC all construction approval decisions are delegated to the local Administrative Authority.

8. UPC Section 201 also provides a process for approving innovations which are beyond the scope of standard code requirements. Section 201(e) states that "The provisions of the Code are not intended to prevent the use of any alternate material or method of construction provided any such alternate has been first approved and its use authorized by the Administrative Authority". Section 201(f) supplies the review standard under which the Administrative Authority shall act in approving an alternate material or method. Such alternate may be approved upon a finding that "the proposed design is satisfactory and complies with the intent of this Code, and the material offered is for the purpose intended, at least the equivalent of that described in this Code, in quality, strength, effectiveness, durability, and safety, or that the methods of installation proposed conform to other acceptable nationally recognized plumbing standards".

Subsections (g), (h), (i) and (j) of UPC Section 201 elaborate upon the alternate material or method approval process, placing upon the petitioning party a burden of proof to support any claims made regarding its adequacy and allowing the Administrative Authority to require tests at the expense of the applicant if insufficient proof is otherwise unavailable.

9. UPC Chapter 5, entitled "Vents and Venting", states within Section 501 a general standard that "each plumbing fixture trap, except as otherwise provided in this Code, shall be protected against siphonage and back pressure, and air circulation shall be assured throughout all parts of the drainage system by means of vent pipes installed in accordance with the requirements of this Chapter and as otherwise required by this Code". Section 502 identifies two limited exceptions where vents may not be required, one eliminating vent piping on a primary interceptor discharging through a secondary interceptor which is properly trapped and vented, and a second exception relating to sink traps serving bars, soda fountains and counters. Section 506, dealing with vent termination, provides that each vent pipe or stack shall extend at least six inches above the roof of the building. UPC Chapter 4 deals with the sizing of drainage system pipes, including vent piping, based on the size of the trap required as translated into fixture unit equivalents. According to Table 4-3, a two-inch vent pipe can accommodate up to 24 fixture units.
10. According to Chapter 5 of the UPC, the purpose of a venting system is to protect the water seals within plumbing fixture traps against siphonage and back pressure. If the trap seal is breached, sewer gases will be able to enter the building through the drainage pipe system. As described by Studor's representatives, prevention of trap seal siphonage is the larger concern. Back pressure is only created under certain designs and conditions, and if such conditions are not present, an apparatus which vents back pressure from the system is unnecessary. Designs which result in a high pressure occurrence include flow within a drainage stack which is over 50 feet in height and drainage flow directed toward a closed vessel such as a sewage sump. High pressure conditions are also created by the use of power cleaning equipment within a public sewer system and sewers which are sloped to conform to hilly or mountainous terrain.
11. The Studor air admittance valves are designed to allow air into a drainage pipe in order to alleviate siphonage. The valve is a mechanical device relying upon a diaphragm which opens to admit air from outside the system when a negative pressure arises within the drainage pipe. Once pressure within the pipe returns to normal atmospheric levels, gravity forces the diaphragm to close. The diaphragm remains closed during high pressure conditions and therefore offers no relief from back pressure.
12. The primary benefit from the use of the air admittance valve is realized in the reduction of construction costs for the drainage system. When each plumbing fixture trap is no longer required to have its own vent pipe through the building roof, major savings can be realized. Further, aesthetic benefits derive from the elimination of multiple roof vent outlets, and the risk of roof leakage through pipe openings is also reduced. Studor's engineers also assert that the use of air admittance valves creates better air flow characteristics generally throughout the drainage system.
13. Although the Studor air admittance valves have received a Classified Marking from the Research and Testing Division of the International Association of Plumbing and Mechanical Officials (IAPMO), the publisher of the UPC, air admittance valves are not considered a conventional

technology under the UPC and therefore must be approved as an alternate material or method in each local jurisdiction in which they are used. Within the framework of the UPC Section 201 terminology, the Studor valve itself is an "alternate material", and its mode of installation and use is an "alternate method of construction". The IAPMO Classified Marking issued for the Studor valves is based upon independent testing demonstrating that the device has been manufactured in compliance with the American Society of Sanitary Engineering (ASSE) Standard 1051, which contains performance requirements for air admittance valves used as fixture and branch devices.

14. Although use of air admittance valves in lieu of multiple roof vents has been approved in a number of American jurisdictions and is widely accepted in Europe, IAPMO has rejected modifications to the Uniform Plumbing Code text proposed by Studor to permit outright the use of air admittance valves as a code-approved procedure. IAPMO documents describing some of the recent code review procedures initiated by Studor have been submitted to the hearing record. These documents do not shed much light on the technical issues underlying the air admittance valve controversy, but they suggest that there is skepticism within the plumbing trade that back pressure conditions can be fully predicted or that any mechanical device can be expected to survive for the useful life of a building. It appears that the concept that each plumbing fixture trap should have its own outside vent is akin to a sacred principle within the plumbing trade, and there is great reluctance to abandon it.
15. The Studor air admittance valve comes in both a two-inch and a four-inch vent pipe size. The four-inch Maxi-Vent is simply a larger version of the two-inch Mini-Vent. However, in addition to being sized for different fittings, the Maxi-Vent is a larger unit with a much higher drainage fixture unit load capacity. According to Studor's question and answer brochure, the Mini-Vent "has up to a 6 dfu capacity" while the Maxi-Vent "has a dfu capacity commensurate to a conventional four-inch vent stack, up to six stories".
16. Installation of the Studor air admittance valves appears to be a straightforward procedure involving compliance with a limited number of locational criteria. According to the Studor literature, an AAV needs to be located a minimum of four inches above the weir of the fixture trap, must be accessible for maintenance or replacement, needs to be in a location with adequate air circulation, and should be installed in a vertical upright position. In addition, a Maxi-Vent installed in an attic area should be located at least six inches above any ceiling insulation and requires the inner lip of the gasket to be trimmed when connected to a four-inch vent pipe. According to the testimony of Studor's engineer, the three to four million installations of Studor devices in the United States and Europe have resulted in less than 1,000 units being reported as defective or improperly installed. Installation problems appear to be related primarily to failure to properly trim the inner lip of the gasket and to the use of pipe dope instead of tape to seal pipe connections.
17. The Studor AAV unit and its thermal rubber diaphragm have been laboratory tested for opening and closing operations for the equivalent of a 30-year life cycle in the United States and an 80-year life cycle in Europe. These testing procedures indicate that the diaphragm returns to its original shape after repeated distortions. However, the Studor device has only been in existence slightly more than 20 years, and so the actual survival of the diaphragm material over time has not yet been established under non-laboratory conditions. The testing procedures also demonstrate satisfactory valve performance under high and low temperature extremes, and no loss of seal under high pressure conditions.
18. Evaluation of the use of Studor air admittance valves as an alternative method of construction is a more complicated affair. First, there is disbelief within sectors of the plumbing trade that it is possible at time of construction to identify and analyze all potential causes of high pressure conditions so that a reliable conclusion of no need for back pressure venting can be drawn. There is a related controversy as to whether within multi-story drainage systems fixture discharges can create induced back pressure to occur at the base of a stack sufficient to blow out a fixture trap. Julius Ballanco, Studor's consulting engineer, testified that the induced back pressure scenario has been studied and modeled within computer programs in a manner sufficient to demonstrate that unacceptable pressure will not be created in a stack less than eight stories high. Mr. Ballanco claims that the contrary studies cited by air admittance valve opponents do not exist.

In response to persistent concerns about unanticipated back pressure conditions, the Studor installation instructions require that every building drainage system contain at least one vent which extends to the open air, that use of AAVs as vent terminals for branch systems be limited

to circumstances where all fixtures will be located on the same floor, and that all horizontal branches which connect at a location more than 35 feet from the top of the stack shall each be served by a relief vent. While these use limitations are generally consistent with the results of laboratory tests, it also must be noted that the Classified Marking for the Studor valves issued by IAPMO is based solely on ASSE 1051 and as such does not include stack use of the devices.

19. In addition to questions concerning induced back pressure conditions and permissible stack height, review of the installation literature also discloses use issues which relate to valve sizing and system complexity. As described by Chief Plumbing Inspector Dick Andersen, the Plumbing Board's rejection of the four-inch Studor valve was not based on any perception of its lesser reliability but rather on the fact that its use was indicative of a complex venting system. While we believe that the Board's approach to the problem of system complexity was inappropriate, we are not unsympathetic to the general concern. Where we differ from the Board is in our conviction that in some circumstances use of the larger Maxi-Vent can eliminate sizing issues that might otherwise attend use of the smaller Mini-Vent. For example, the only criterion which Studor provides in its specifications for choosing the Maxi-Vent instead of the Mini-Vent is the size of the connecting vent pipe. While vent pipe sizing is generally dictated by the UPC based on fixture unit requirements, it is not clear that the Studor instructions prevent a two-inch pipe from being installed to vent a branch with multiple fixtures in a context where the venting capacity of the Studor Mini-Vent is exceeded. Accordingly, in the absence of engineered plans, we find in order to assure adequate venting of multiple fixture systems that it is necessary to impose limitations on the use of the two-inch Studor valve in situations where the unrestricted use of the larger four-inch valve would be warranted.
20. A further concern expressed by Chief Inspector Andersen focused on the ability of his inspection staff to intelligently evaluate the use in the field of Studor devices. Studor has offered training in air admittance valve use, and a condition requiring such training to be made available has been added to the decision.
21. Also relating to the system complexity issue, we have imposed conditions on the use of Studor devices which incorporate a requirement for engineered design if certain basic standards are varied. While Mr. Ballanco testified that the main drain vent required on each building may often be appropriately sized below the normal UPC standard, the importance of the main vent to system integrity requires that any reduction in its size be based on an engineering design specific to the system. Likewise, in the absence of an IAPMO Classified Marking based on the ASSE 1050 standards, use of air admittance valves as vent terminals for vent stacks or stack vents should also require approval of engineered plans in order to guarantee proper use.
22. In general we find the conditions imposed by the Plumbing Board of Appeals in its May 10, 1996 decision to be unsupported by the evidence. Certainly the rather extreme notice and use conditions proposed by the Board go far beyond anything which can be justified by the Board's own findings of fact. On the other hand, while we believe that the three-year approval period proposed by the Board is unduly harsh in the absence of any evidential basis for expecting that the Studor devices will fail, we find that provision of an approval modification or revocation process is appropriate to assure the flexibility necessary to respond to new technical information, and the conditions attached hereto contain such a procedure.

CONCLUSIONS:

1. As an alternate material subject to approval by the Administrative Authority under the terms of UPC Section 201(f), the evidence indicates that the Studor air admittance valve is of satisfactory design, complies with the intent of the UPC, and is at least the equivalent of materials prescribed in the code in terms of quality, strength, effectiveness, durability and safety.
2. As an alternate method of construction under the standards stated at UPC Section 201(f), installation of the Studor air admittance valves conforms to acceptable nationally recognized plumbing standards so long as adequate conditions are imposed on their use to assure that they are properly installed within complex drainage systems. The limitations on use stated in the manufacturer's installation instructions, as augmented by the conditions of this approval, assure that applicable plumbing standards for safety and effectiveness will be met.
3. The Health Department has argued that under the provisions of UPC Section 201 approval of an alternate method or material is entirely discretionary with the local Administrative Authority, and that a discretionary power to reject an approval request may be exercised even though such

action lacks a compelling basis in the evidential record. We reject this argument because the exercise of UPC discretionary authority is necessarily tempered by applicable provisions of the King County Code governing administrative appeals. The various provisions of KCC Chapter 20.24 governing administrative appeals specify that appeal decisions shall contain findings and conclusions based on evidence in the record and shall demonstrate the manner in which such decision is consistent with and carries out applicable ordinances and regulations. Such review standards preclude the authority to exercise discretion in a manner unrelated to the relevant evidentiary framework.

4. The Health Department also argues that the decision of the Plumbing Board of Appeals should be accorded great deference within an administrative appeal. In support of this proposition, the Department has cited numerous Washington appellate cases. First, we note that these appellate cases deal with the relationship between State courts and State administrative agencies as mediated by the Administrative Procedure Act. The Hearing Examiner is not a court but merely an extension of the administrative process, and County administrative appeal procedures are not subject to the State Administrative Procedure Act.
5. Nonetheless, the Hearing Examiner's procedural rules provide that substantial weight may be accorded to factual determinations and conclusions made by County agencies with respect to matters within their jurisdiction, and our review of the State case decisions discloses no inconsistency in principle between the rules applied in our Hearing Examiner appellate review and those applicable to review of State agency decisions. Deference to agency decisions based on administrative expertise and specialized knowledge is considered appropriate only where the agency has drawn inferences from the evidence presented and its reasoning is supported by substantial evidence. In this regard, the weakness of the Plumbing Board process continues to be its failure to make adequate findings of fact based on the specific standards stated at UPC Section 201. In the absence of such findings, there is little in the Board decision to which deference might attach regardless of what appellate review standard is employed. Moreover, the conditions of approval appended to this decision in fact confer deference upon the Plumbing Board's concerns to the extent that such concerns are based upon the evidential record.

DECISION:

The appeal of Studor, Inc. is GRANTED.

ORDER:

The use of Studor air admittance valves as alternate materials and methods of construction within plumbing and drainage systems installed in King County is approved subject to the following conditions:

1. In addition to the restrictions stated within the manufacturer's installation instructions, the following limitations on the use of Studor air admittance valves shall apply unless detailed plans demonstrating the technical feasibility of applying less stringent limitations have been prepared by a licensed plumbing contractor or professional engineer and submitted to and approved by the Seattle-King County Department of Public Health:
 - a. The main drain vent required for each building shall include a full-size vent through the roof meeting UPC standards.
 - b. The two-inch Studor Mini-Vent air admittance valve shall be used only as an individual fixture vent, a common vent for two fixtures, or a single bathroom group wet vent.
 - c. Air admittance valves shall not be used as vent terminals for vent stacks or stack vents.
2. Each year Studor shall offer training in the installation and use of the air admittance valves to Health Department plumbing inspectors.
3. Beginning three years after the effective date of this decision, the Chief Plumbing Inspector may initiate proceedings to modify or revoke approval of the Studor air admittance valve for use in King County based on evidence of its inability to meet applicable industry standards, a history of product defects or materials failure, or a local pattern of inappropriate and unsafe use or installation of the device. Such proceedings shall be heard by the Plumbing Board of Appeals,

whose decision thereupon shall be appealable to the Hearing Examiner in the manner provided by KCC 16.32.170.

4. Any requests by Studor to modify the conditions of this approval shall be processed as a new application for approval of an alternate material or method under UPC Section 201 or its successor.

ORDERED this 27th day of September, 1996.

Stafford L. Smith, Deputy
King County Hearing Examiner

TRANSMITTED this 27th day of September, 1996, to the following parties and interested persons:

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Pursuant to Chapter 20.24, King County Code, the King County Council has directed that the Examiner make the final decision on behalf of the County regarding Plumbing Board appeals. The Examiner's decision shall be final and conclusive unless within twenty (20) days from the date of the decision an aggrieved party or person applies for a writ of certiorari from the Superior Court in and for the County of King, State of Washington, for the purpose of review of the decision.

MINUTES OF THE SEPTEMBER 18, 1996, PUBLIC HEARING ON SEATTLE-KING COUNTY
DEPARTMENT OF PUBLIC HEALTH FILE NO. HD950001 - STUDOR, INC.:

Stafford L. Smith was the Hearing Examiner in this matter. Participating at the hearing were Robert Johns/Attorney At Law (representing Studor, Inc.), Julius Ballanco/JB Engineering & Code Consulting, Inc. ("JBECC"), John M. Halliwill, International Association of Plumbing and Mechanical Officials Research and Testing, Inc. ("IAPMO"), Cassandra Newell/Office of the Prosecut-ing Attorney Civil Division, Dick Andersen/Seattle-King Co. Dept. of Public Health Chief Plumbing Inspector, and Roman Welyczko/ Seattle-King Co. Department of Public Health Code Enforcement Coordinator.

The following exhibits were offered and entered into the record:

- Exhibit No. 1 Studor's Notebook, submitted to the King County Plumbing Board of Appeals, containing the following informational and technical documents regarding Studor Air Admittance Valves:
- 1A(1). Installation and design criteria of Studor Air Admittance Valves, based on the IAPMO Uniform Commercial Code (9 pages)
 - 1B(2). General description of Studor Air Admittance Valves (4 pages)
 - 1C(3). Question and answer brochure for Studor Air Admittance Valves (4 pages)
 - 1D(4). Specifications for air admittance valves (1 page)
 - 1E(5). Performance requirements for air admittance valves for plumbing DWV systems stack type devices, American Society of Sanitary Engineering ("ASSE") Standard 1050, December 1991 (12 pages)
 - 1F(6). Performance requirements for air admittance valves for plumbing drainage systems, ASSE Standard 1051, June 1990 (8 pages)
 - 1G(7). Test report on Studor Air Admittance Valves, conducted by United States Testing Company, Inc. ("USTC"), based on ASSE Standard 1050-91, September 10, 1993 (4 pages)
 - 1H(8). Test report on Studor Air Admittance Valves, conducted by USTC, based on ASSE Standard 1051-90, September 10, 1993 (3 pages)
 - 1I(9). Test report on Studor Air Admittance Valves, conducted by USTC, based on ASSE Standard 1051-90, June 8, 1994 (4 pages)
 - 1J(10). Research report No. 92-46 issued by BOCA Evaluation Services, Inc. ("BOCA"), January 1993 (5 pages)
 - 1K(11). Engineering report on Studor Air Admittance Valves, based on BOCA National Plumbing Code, prepared by JBECC, November 30, 1992 (12 pages)
 - 1L(12). Engineering report on Studor Air Admittance Valves, prepared by JBECC, December 15, 1992 (12 pages)
 - 1M(13). Report No. 9449, evaluating Studor Air Admittance Valves for compliance with the Standard Plumbing Code, issued by SBCCI Public Safety Testing and Evaluation Services, 1994 (8 pages)
 - 1N(14). Copy of certificate of LISTING, issued by IAPMO, file No. 3390, for Studor Air Admittance Valves, (1 page)
 - 1O(15). Engineering report on Studor Air Admittance Valves, based on IAPMO Uniform Plumbing Code, prepared by JBECC, June 14, 1994 (10 pages)
 - 1P(16). Order entered by American Arbitration Association, May 20, 1994, finding the use of Studor Air Admittance Valves to be safe (1 page)
 - 1Q(17). Copy of Certificate of Acceptability, Michigan Department of Labor, approving use of Studor Air Admittance Valves, September 21, 1994 (1 page)
 - 1R(18). Report on "The Effect of Air Admittance Valves on the Dynamic Response of Building Drainage and Vent Systems", prepared by Professor J.A.Swaffield and Dr.D.P. Campbell, Heriot-Watt University, May, 1993 (21 pages)
 - 1S(19). Report on "The Effect of Air Admittance Valves", prepared by Professor J.A.Swaffield and Dr.D.P. Campbell, Heriot-Watt University, August, 1993 (11 pages)
 - 1T(20). Report on the cost comparison between installing Studor Air Admittance Valves and extending vents to the outside, prepared by JBECC, January 9, 1995 (9 pages)
 - 1U(21). Magazine Article, "Air Admittance Valves--Pros & Cons", by Julius Ballanco, in PLUMBING & MECHANICAL magazine, October 1994 (2 pages)
- Exhibit No. 2 Studor, Inc. lifetime warranty, re: Maxi-Vent and Mini-Vent air admittance valves
- Exhibit No. 3 Studor Air Admittance Valves installation information and training video
- Exhibit No. 4 Written decision on Studor, Inc. appeal, by the King County Plumbing Board of Appeals, dated May 10, 1996
- Exhibit No. 5 IAPMO codes and standards monograph, 67th Annual Education and Business Conference, September 22--26, 1996, Des Moines, Iowa; pages 46, 48, & 49, summarizing Studor's proposed changes to the Uniform Plumbing Code; and, the IAPMO Code Committee's recommendations with regard to Studor's proposals
- Exhibit No. 6 Magazine Article, "Will Air Admittance Valves Do The Job?", PM ENGINEER magazine, February/March 1995, pages 28/29, 30/31, and 33/34
- Exhibit No. 7 Copy of certificate of CLASSIFIED MARKING, issued by IAPMO Research and Testing, Inc., for Studor Air Admittance Valves, dated "Accepted: March 1996", and dated "Void After: March 1997"
- Exhibit No. 8 Excerpt from transcript of International Association of Plumbing & Mechanical Officials, A40 Uniform Plumbing Code Changes Committee Meeting, May 2, 1996, Volume 2, pages 269 through 529

Exhibit No. 9 Copy of article, "The IAPMO Listing Process", not dated/publication not identified

Exhibit No. 10 Copy of Pages 21 & 22, International Association Of Plumbing and Mechanical
Officials, 1996 Uniform Plumbing Code Interpretations Manual, re: Use of Table
14-1

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